

Spaceport Florida Authority Business Plan

Executive Summary

Background

The Spaceport Florida Authority (SFA) was established under Florida Statute by the Governor and Legislature to assist the development of our nation's space transportation industry and to generate new space-related jobs, investment and opportunities statewide.¹

A team composed of Booz·Allen & Hamilton, Coopers and Lybrand, Holland and Knight, Tradelinks, and Jeff Sharkey reviewed the SFA's activities and accomplishments to date. From this background data, a business plan and roadmap to success were developed to aid SFA in becoming a successful spaceport.

The team, led by Booz·Allen, was tasked to:

- Review the existing strategic plan and SFA operating concepts
- Assess accomplishments from a marketing, financial, and regulatory perspective
- Assess interfaces required to support commercial space launch operations, education, the international community, and industry
- Prepare a business plan to include:
 - Long-range SFA operating concepts
 - Proposed interfaces and international participation
 - Market, financial, and regulatory analyses to support the operating concepts
 - Follow-on actions and recommendations to implement the "Roadmap to Success."

Summary

The team evaluated each area requested by SFA and provided a summary report card. The report card highlights the achievements that SFA has attained thus far, and identifies

areas for improvement which are then detailed in the "Roadmap to Success."

Overall, SFA received high scores indicative of their commitment to space launch and economic, educational, and tourism development in the state of Florida.

REPORT CARD

Item	Grade	Comments
Launch Capability	A	LC 46 on schedule and budget. Meets technical requirements.
Tourism and Education	B	Increasing Florida tourism which increases revenue. Established relationships with local academia.
Economic Development and Financial	A	Significant contribution to Florida space-related projects. Innovative and resourceful financing.
Legislative Status, Regulatory and Political Issues	B+	Successfully developed key relationships in local, state, and federal governments.
Marketing	B	Responds well to opportunities, but needs to focus activities.
International	B+	Actively pursued the important customers. Needs to ensure the list is complete.

In summary, the team determined that SFA is involved in many activities which are critical to its continued success. These activities must be prioritized and accomplished in a logical, structured fashion to ensure SFA's goals are realized.

Roadmap to Success

Analysis of each report card item provided a list of activities which require prioritization

¹ Spaceport Florida Authority 1995 Annual Report

for the Roadmap to Success. The roadmap consists of several activities that SFA should focus on to become more competitive and successful in the space launch market. The first group of activities (highest priority) in the Roadmap are viewed as critical and should be accomplished in the near term (six to twelve months). As these activities are explored and pursued, the remaining Roadmap and its priorities will likely change. The first group of activities is discussed below.

SFA Goals/Strategic Plan

A structured approach to developing a strong strategic plan would enable SFA to verify the goals in the Roadmap and assist in prioritizing activities. A basic framework for strategic planning should begin with identifying a clear mission and vision, defining measurable goals, and stating objectives which are communicated from the office of the director to the staff. Working sessions then develop action strategies to implement the strategic plan. It is imperative to have all key players present and committed throughout the strategic planning process since they will decide the future of the organization.

Develop Marketing Plan

SFA should develop a standard marketing briefing that they can use to attract customers from various communities including domestic and international launch vehicle and payload providers. This information could also be used to gain additional legislative support. A marketing strategy must also be developed which should be in line with the previously developed strategic plan. As part of the marketing plan, SFA needs to promulgate Florida's space launch capabilities into the space community. This includes visiting potential customers, Internet web site

development, and an increase in media visibility.

Develop Service Fee Schedule

To prepare for operations at LC 46 and other facilities, a service fee schedule should be developed to charge appropriately for SFA's services. A bottoms up analysis will provide the background data to construct a fee structure and provide input data on any additional investment required. In addition, return on investment projections will assist SFA in securing funding for projects. This activity needs to be completed in the near future to adequately prepare for LC 46 operations and marketing opportunities.

Develop Cost Model to Measure Revenue

A cost model will provide the structure to measure SFA's revenue accomplishments and assist in predicting how future projects should be funded. The model should include current and future projects with data population occurring as the model is developed. Reports should be tailored to illustrate changes in data and support SFA briefing requirements such as the annual report.

Develop Economic Plan with Enterprise Florida

Enterprise Florida will undoubtedly affect SFA's future funding activities. SFA should identify the future grant-worthy projects with Enterprise Florida to establish common economic goals. Decisions will need to be made between the two groups to determine roles as conduit debt issuers.

Conclusions

SFA has made significant progress as part of its goal to provide commercial launch services and enhance space commerce in the State of Florida. However, additional steps

are required for SFA to attain a higher level of success. Concentrating efforts on planning for the future by stepping through the Roadmap to Success, SFA can ensure that it will be ready for commercial success in the space launch business.

Spaceport Florida Authority

Business Plan

December 31, 1996

Booz · Allen & Hamilton, Inc.

Contents...

- Statement of Work
- Team Members
- Current Operating Concept
- Market Analysis
- Assessment of Accomplishments
- Sample Operating Concept
- Roadmap to Success

Statement of Work...

THE BOOZ · ALLEN & HAMILTON TEAM WAS COMMISSIONED BY THE SPACEPORT FLORIDA AUTHORITY TO CONDUCT AN EVALUATION OF THE AUTHORITY'S ACCOMPLISHMENTS TO DATE AND DEVELOP A BUSINESS PLAN AND APPROACH.

- Review existing strategic planning and SFA operating concepts
- Assess SFA accomplishments to date from a marketing, financial, and regulatory perspective
- Assess SFA interfaces required to support commercial space launch operations, education, the international community, and industry
- Prepare a business plan to include:
 - Long-range SFA operating concepts
 - Proposed interfaces and international participation
 - Market, financial, and regulatory analyses to support the operating concepts
 - Follow-on actions and recommendations to implement the "Roadmap to Success"

Team members included:

- Coopers & Lybrand
- Holland & Knight
- Tradelinks
- Jeff Sharkey

Team Members' Capabilities...

TEAM MEMBERS WERE CHOSEN BASED ON THEIR FUNCTIONAL EXPERTISE AND THEIR EXPERIENCE WORKING WITH THE AUTHORITY.

- Booz · Allen & Hamilton
 - Domestic launch and space expertise
 - International space expertise
 - Domestic and international airport strategic planning
 - Policy cost/benefits analysis for domestic airports
 - Privatization and organizational restructuring of international ports
 - Market and economic evaluation of domestic and international transit systems
- Coopers and Lybrand
 - SFA auditors
 - Strategic financial planning
 - Service valuation and fee structure development
 - Financial management tools and methodologies

Team Members' Capabilities... (continued)

- Holland and Knight
 - Knowledge of Florida Statutes
 - Federal and Florida law including tax-exempt financing and Federal grant programs
 - SFA's legislative agenda before Congress and Florida legislature
 - Legal counsel to SFA
 - Worked with other Spaceport authorities and Aerospace States Association
 - Legal issue expertise, specifically FARs related to SFA and Federal Government
- Tradelinks
 - International agreements
 - Government-to-government relations
 - Department of State knowledge
 - County-to-county cost analyses
- Jeff Sharkey
 - Regulatory and legislative understanding of Spaceport Authority
 - Strategic planning for quasi-government organizations
 - Business analysis of large corporations and airports
 - International policies

Current Operating Concept Assessment...

THE TEAM EVALUATED SFA'S CURRENT CAPABILITIES AND ACCOMPLISHMENTS IN THE FOLLOWING AREAS:

- Launch Capability
- Tourism and Education
- Economic Development
- Financial
- Legislative
- Regulatory & Political
- Marketing

Current Operating Concept - Launch Capability...

A VIABLE LAUNCH COMPLEX AND SUPPORTING INFRASTRUCTURE ARE READY TO SUPPORT A DEFINED CUSTOMER BASE.

- Launch Complex 46
 - Joint usage facility with the Navy
 - Generic capability to support a variety of launch vehicles, payloads and customers
 - Major focus on keeping operations simple and cost effective
 - Mobile launch tower easily reconfigured
 - Launch pedestal accommodates variety of boosters
 - Standardized interfaces at launch pedestal
 - Mobile launch and control capability

□ Construction complete December 1996, operational in February 1997

□ Launch Complex 46 first launch is scheduled for September 1997

Customers

- Lockheed Martin—NASA Lunar Prospector
- Orbital Sciences—Taurus vehicle
- Alliant Techsystems—TBD

□ International community—preliminary discussions underway

□ Development of CSC to support launch operations and other activities

Current Operating Concept - Tourism and Education...

STRONG TOURISM AND EDUCATION BENEFITS HAVE ALREADY BEEN REALIZED EARLY IN SFA'S OPERATIONS.

- Strong focus on enhancing education, research, and tourism capabilities
 - Student Sub-orbital Launch Programs
 - Promote commercial use of space and educational base
 - Available to other locations remote to Florida
 - Opportunity for students to participate in "hands-on" activity
 - Tourism
 - In conjunction with NASA/KSC, funded Apollo/Saturn V Center
 - Funded expansion of Space Camp adjacent to KSC
 - Both provided unique funding arrangements by SFA
 - Promotes space-related interests
 - Education
 - Development of space related academia a major focus
 - Space Communications Technology Center @ Florida Atlantic University
 - Workforce Training & Certification Program to ensure availability of skills

Current Operating Concept - Economic Development...

SFA'S ACTIVITIES HAVE RESULTED IN SIGNIFICANT ECONOMIC BENEFITS TO BREVARD COUNTY AND THE STATE OF FLORIDA.

- Authority involved in projects estimated at \$90M in new space-related construction and investment in the State of Florida
- Launch Complex 46 (Primary Focus)
 - \$7.2M in modifications and conversion plus an additional \$.3M from NASA
 - Launch commitments from Orbital Sciences Corp., Lockheed Martin, and Alliant Techsystems, and Republic of China
 - Launch goal of 12 or more payloads per year once operational
 - LC-46 leased on a month-to-month basis for a defined access fee (fee amount to be determined)
 - Authority would pay an estimated \$1M in launch facilities and maintenance expenses from those access fees
- Potential for substantial monetary impacts for Brevard County, including the creation of jobs in launch services and satellite processing, could be significant.
- Customer Service Center
 - SFA completing first phase of this \$3M project
 - Intended functions
 - Commercial launch customers can monitor progress of satellite launch preparation
 - Customers can receive support from government or academic personnel
 - Congregation point for news media, industry representatives
 - Training and research
- Launch Complex 20
 - SFA has submitted a proposal to the USAF for conversion of Army suborbital facility for small launch vehicles

SFA HAS ALSO USED CREATIVE MEANS TO FINANCE REVENUE GENERATING PROJECTS.

- Titan Rocket Motor Storage Facility
 - SFA provided financing for \$28M facility at Camp Blanding
 - Resulting in Clay and Bradford Counties attracting \$4.2M federally funded railroad upgrade
 - Provides increased protection from potential future base realignment/closures
 - “Conduit” financing provided by South Trust Bank, borrowed by SFA
 - Secured by 39 month Lockheed Martin lease of SFA facility
 - Also could not be structured to permit interest paid to be tax-exempt, but savings were obtained through the “conduit” structure in the form of exemptions from certain Florida taxes
 - SFA receives administration fee of \$18K per month for participation
 - Lease payments to SFA subject to Florida sales tax (6%)
 - Generates sales tax revenues to the State of Florida of \$24.7K per month
- Liquid Hydrogen Production Facility
 - SFA successfully attracted this \$25M Air Products and Chemicals facility to Santa Rosa County in 1991

SFA'S ENTREPRENEURIAL EFFORTS HAVE SERVED TO EXPAND TOURISM AND PROMOTE SPACE-RELATED EDUCATION IN THE STATE.

- Apollo/Saturn V Center
 - Authority arranged \$25M in financing for \$30M museum/educational facility
 - SFA participation provided funds to NASA without going through ordinary appropriations process
 - Facility added to KSC tour with estimated 2 million tourists
 - Facility will directly contribute to growth by an estimated 4 million visitors by the year 2000
 - “Conduit” financing provided by South Trust Bank, borrowed by SFA
 - Secured by revenues generated from a surcharge paid by passengers of KSC bus tour
 - Although financing could not be structured to permit the interest paid to be tax-exempt, savings were obtained through the “conduit” structure in the form of exemptions from certain Florida taxes
 - SFA receives \$100K/year as issuers fee for 8 year term of the agreement
- U.S. Space Camp
 - SFA issued \$7.1M Industrial Development Bonds, Series 1995, to finance expansion of U.S. Space Camp and Astronaut Hall of Fame, and refinance existing Space Camp debt
 - Facility attracts approximately 200,000 visitors to Brevard County annually
 - “Conduit,” tax-exempt financing in which SFA placed tax-exempt bonds with a financial institution and re-loaned the proceeds of those bonds to U.S. Space Camp Foundation
 - Provided mechanism for Foundation to borrow at a lower, tax-exempt rate of approximately 6.75% rather than higher interest on conventional rates
 - SFA received one-time issuers fee of \$12.5K as compensation for participation
- Florida Atlantic University Technical Center
 - SFA attracted this \$5M satellite technology development center to FAU in Boca Raton
 - Center conducts research on commercially-viable satellite telecommunications technologies, including data compression techniques and transmission requirements for high definition television

Current Operating Concept - Financial...

SFA HAS UTILIZED A VARIETY OF FUNDING SOURCES TO SUPPORT THEIR OPERATIONS.

- Current Funding Sources
 - Grants
 - Conduit Financing
 - Limited Obligation Bank Loan
 - Appropriations
 - Non-interest Bearing Loan (DOT)
- Financial Condition
 - Financial analysis (trend/ratio) not useful without operating income
 - Continued support from state, banks, and aerospace companies

ADEQUATE FINANCIAL CONTROLS ARE IN PLACE TO SUPPORT DAY-TO-DAY ACTIVITIES.

- Financial Systems
 - SFA currently uses a customized COTS financial system
 - Monthly financial reports are produced
 - Based on audits performed on the SFA, the current financial systems appear to be capable of supporting current workload
- Internal Controls
 - A recent audit stated that no material weaknesses were found in the system or process

TO DATE, SFA HAS BEEN UNSUCCESSFUL IN OBTAINING LEGISLATION TO PERMIT SPACEPORT FACILITIES TO BE FINANCED WITH TAX-EXEMPT DEBT.

- Current Law
 - Airports can be financed with tax-exempt "exempt facility bonds" under current law
 - "Airport" includes facilities that are directly related and essential to servicing aircraft, enabling aircraft to take off or land, and transferring passengers to or from aircraft
 - "Airport" also includes certain other types of facilities such as terminals, hangars, loading facilities, maintenance or overhaul facilities, storage facilities, and radar installations
 - To be financed as part of an airport:
 - The primary function of the facility must be transportation, not manufacturing
 - The facility must be owned by a state or local government.
 - The facility must serve the general public or be part of a larger facility that serves the general public.
 - "Exempt Facility" Bonds for airports are not subject to the state-by-state volume cap.
 - "Exempt Facility" Bonds may not be federally guaranteed.
- Problems for Spaceports
 - Very doubtful that a spaceport could satisfy the definition of "airport."
 - Virtually no chance that a spaceport could satisfy the "public use" requirement

SEVERAL CHANGES IN LEGISLATION WOULD NEED TO TAKE PLACE TO ACHIEVE THE SAME TAX-EXEMPT DEBT STATUS AS AN AIRPORT.

- Proposed Legislative Solution
 - The statute would be amended to expressly list "spaceports" as an additional type of "exempt facility."
 - "Spaceport" would include facilities that are directly related and essential to servicing spacecraft, enabling spacecraft to take off or land, and transferring passengers or space cargo to or from spacecraft
 - "Spaceport" would also include certain other types of facilities such as launch control centers, repair shops, maintenance or overhaul facilities, rocket assembly facilities, and storage facilities.
- To be financed as part of a spaceport:
 - The primary function of the facility must be transportation, not manufacturing.
 - The facility must be owned by a state or local government.
 - Location on federally-owned land would be disregarded for this purpose.
 - Spaceport facilities would be regarded as automatically serving the general public.
 - "Exempt Facility" Bonds for spaceports would not be subject to the state-by-state volume cap.
 - "Exempt Facility" Bonds for spaceports could not be federally guaranteed.
 - Payments by the federal government in the form of rent, user fees, or other charges for the use of the spaceport would not violate the prohibition on federal guaranties.

Current Operating Concept - Legislative... (continued)

- Prospects for Enactment
 - All previous legislation to implement the described amendment has either died at the end of a previous Congress or will die when the current 104th Congress adjourns
- For the effort to be successful in the next, 105th Congress:
 - There will have to be a major piece of tax legislation under consideration to which the proposal can be attached
 - The amendment will need to have sufficient support from other State spaceport authorities to avoid characterization as a "rifle shot"
 - The estimated revenue loss from enactment of the proposal must remain low
 - The Department of the Treasury must be persuaded to drop its previous opposition to the proposal

SFA HAS SUCCESSFULLY GARNERED THE SUPPORT OF STATE AND FEDERAL AUTHORITIES AND SHOULD CONTINUE TO NURTURE THESE RELATIONSHIPS. A SOLID RELATIONSHIP WITH THE NEW ECONOMIC DEVELOPMENT STRUCTURE WITHIN THE STATE (ENTERPRISE FLORIDA) SHOULD BE A PRIMARY FOCUS.

- SFA Authority
 - Florida Statutory Authority (Chapter 331, Part II)
 - Modeled after statutes for Airport authorities and Seaports in 1989
 - Broad-ranging authority to exercise all powers afforded corporations under Florida law
- Political Frameworks
 - Political - Governor, House, Senate, staff, and business community
 - Enterprise Florida - New economic development structure and funding agents
- Potential Sources for Recurring Funding
 - Taxing capability
 - Sales tax recapture capability
 - State general revenue
 - Transportation Trust Fund
- Potential Areas of Expanded Spaceport Regulatory Authority
 - Full faith and credit bonding authority of State

Current Operating Concept - Marketing...

SFA HAS USED INNOVATIVE APPROACHES TO MARKET NEW CUSTOMERS. HOWEVER, EFFORTS HAVE NOT BEEN PURSUED AS PART OF A FOCUSED MARKETING STRATEGY.

- SFA has developed a proven capability to market innovative ideas and to successfully sign targeted customers
- SFA takes an active stance in marketing with a variety of customers
 - Commercial space launch and payload providers
 - Federal, state, and foreign governments
 - Large and small businesses
 - Academia
- Primarily directed to development and launching of commercial space vehicles at Eastern Range
 - Marketing efforts hindered by cost of doing business
 - Increased competition
- Marketing of CCAFS capabilities aided by positive USAF/SFA relationship
 - SFA has influenced significant changes in range operations and procedures
 - SFA has promoted a team environment and user friendly facility development process
- Present marketing strategy tailored for specific target customers
 - No standardized marketing briefing available
 - Marketing strategy is developed for each individual customer or government entity as needed
 - Development and utilization of Internet Web Site would significantly enhance marketing efforts

Market Analysis...

OUR PRELIMINARY ANALYSIS EXAMINED SFA LAUNCH COMPETITION, AND LAUNCH VEHICLE AND PAYLOAD MARKETS.

- Domestic and International Commercial Space Launch Facilities
- SFA Potential Launch Vehicle Market
- National Mission Model (Projected Annual Payloads)

Market Analysis - Domestic and International Space Launch Facilities...

EACH SPACEPORT WAS EXAMINED TO DETERMINE COMPETITION FOR POTENTIAL SFA CUSTOMERS.

Launch Service Providers	Number of Pads	Status	Vehicle/Class	Orbit Destinations	Comments
Spaceport Florida Authority	1: LC46	Operational 1st Qtr 1997	SELV/MELV	Equatorial - Medium Latitudes	<ul style="list-style-type: none"> Significant launch services support infrastructure (range safety, launch processing, logistics/transportation) <ul style="list-style-type: none"> NASA USAF First launch scheduled September 1997
Virginia Commercial Space Flight Authority	2: Zero-A Zero-B	Operational 2/97	SR/SELV	Low - Medium Latitudes	<ul style="list-style-type: none"> Launch services infrastructure available Four Orbcomm (Pegasus XL) launches planned in '97 Conestoga launch facility (portable service tower) in place Planned support to 36-66° orbital locations
The California Spaceport (VAFB)	1: SLF	1997	SELV/MELV LELV	Polar, sun-synchronous	<ul style="list-style-type: none"> Significant launch services support infrastructure (range safety, launch processing, logistics/transportation) Spaceport leases the Integrated Processing Facility at SLC-6, adjacent to SLC-6 launch pad Space Launch Facility (SLF) (California Spaceport launch pad) under construction nearby
Altair Aerospace Development Spaceport	3: LD1 LD2 LD3	Operational '98	SELV/MELV (LLV 3-6)	Polar, sun-synchronous	<ul style="list-style-type: none"> Complete start-to-finish capability Customers have total control of operations All indoor processing
Spaceport Canada (Aurora)	4: SELV1 SELV2 MELV1 MELV2	Operational '97 Operational '98 Operational '99 Operational '99	SR, SELV SR, SELV MELV MELV	Polar, sun-synchronous	<ul style="list-style-type: none"> Uses ACTA Corp. for range safety (same range safety analysis contractor for VAFB & PAFB) Emphasizes shortened launch license/permit approval Business decision to avoid LELVs (Titan, Proton, Zenit)
Bailonour Cosmodrome, Kazakhstan	2 Proton Pads 2 Zenit Pads	Operational	MELV/LELV	Equatorial - Polar	<ul style="list-style-type: none"> Upgrades in progress to Western standards (clean rooms, runway upgrades, integration facilities) Launched first commercial payload (ASTRA 1F - 4/9/96) ASTRA 1G announced for 2nd quarter '97
Plesetsk, Russia	Multiple	Operational	MELV/LELV	Equatorial - Polar	<ul style="list-style-type: none"> Serious launch constraints due to population overflight Plesetsk is most used launch facility in world Services 62-83° orbital launches Serious launch constraints due to population overflight (vehicles not launched below 51°)

SR: Sounding Rocket
SELV: Small Expendable Launch Vehicle
MELV: Medium Expendable Launch Vehicle
LELV: Large Expendable Launch Vehicle

1-8 KLBS TO LEO
8-10 KLBS TO LEO
10+ KLBS TO LEO

Market Analysis - Domestic and International Space Launch Facilities (continued)...

SFA IS SOLIDLY POSITIONED TO BE A LEADING PROVIDER OF COMMERCIAL LAUNCH SERVICES FOR SMALL AND MEDIUM CLASS PAYLOADS.

Launch Service Providers	Number of Pads	Status	Vehicle/Class	Orbit Destinations	Comments
Kourou, French Guiana	3: ELA1 ELA2 ELA3	Deactivated '89 Operational Operational	Ariane 1, 2, 3/SELV Ariane 3, 4/MELV Ariane 5/LELV	Equatorial - Polar	<ul style="list-style-type: none"> • Significant customer support capability • Complexes customized for Ariane vehicles • ELA-2 available for commercial launches • Significantly reduced polar-orbit capability • McDonnell Douglas currently investigating use of ELA1 for Delta III launches • Ariane 4 (MELV) holds largest market share in international commercial launch market
Woomera	Unknown	Suborbital is operational Orbital '99	SR SR/SELV/MELV LELV	Equatorial - Medium Latitudes	<ul style="list-style-type: none"> • Launch sites, range safety, rocket preparation facilities, C&T in place from suborbital programs • Transfield Defense Systems performing feasibility for Protons (or decommissioned SS-25s) from Gunn Point (Northern Coast) • Stating readiness for 1999
Gunn Point, Australia	Multiple	Operational	SELV/MELV	Equatorial - Polar	<ul style="list-style-type: none"> • Geosynchronous Satellite Launch Vehicle (LELV) in development
SHAR Center (Sriharikota, Eastern India)	Multiple	Both Operational	SR	N/A	<ul style="list-style-type: none"> • Polar Satellite Launch Vehicle • Focus on developing national self-reliant launch capability • Severely constrained polar orbits; population overflight requires 140° launch and orbital plane change maneuvers to polar • Balasore may be upgraded to polar capability
Yamaguchi Space Center, Japan	Takesaki Range (2) Osaki Range (2)	Operational	SR/SELV MELV/LELV	Equatorial - Polar	<ul style="list-style-type: none"> • Sounding Rockets and small expendables (HI & M class) • Facility being upgraded for new J-class and M-V vehicles (SELVs) • HII launches - currently marketing HII and J1 services
Xichang Satellite Launching Center (SLC), Jiuquan SLC, Taiyuan SLC China	3 Unknown Unknown	Operational Operational Operational	CZ-3, 3A, 2E, 3B (MELV/LELV) CZ-2C, 1D (SELV/LELV) CZ-4 (MELV)	Equatorial - Polar	<ul style="list-style-type: none"> • Long March series of vehicles • Commercial launches available • Population overflight is a serious concern
Alcatara, Brazil	2	Operational '97	SR, SELV	Equatorial	<ul style="list-style-type: none"> • Satellite Launching Vehicle (LVS) (4 stage) • ESA currently uses for final stage of Ariane launch monitoring

SR: Sounding Rocket

Market Analysis - Potential Launch Vehicle Market...

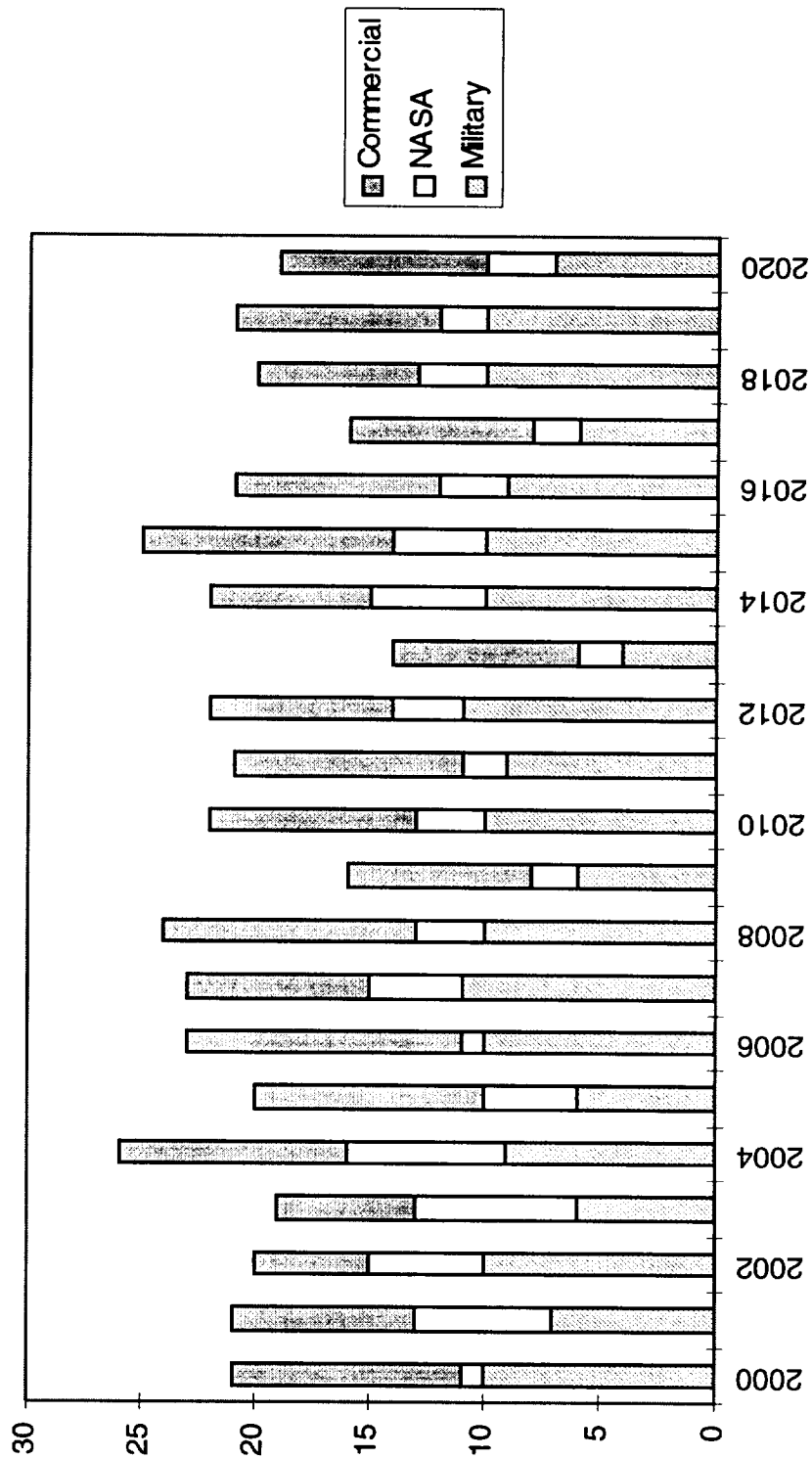
NUMEROUS LAUNCH VEHICLES COULD BE SUPPORTED WITH THE SFA LAUNCH INFRASTRUCTURE. RELAXATION OF U.S. TRADE RESTRICTIONS WOULD INCREASE THE POTENTIAL MARKET FOR INTERNATIONAL LAUNCH VEHICLES.

Family	Model	Country	LEO (lbs)	GTO (lbs)	Comments
LLV/LMLV	1	US	1755		<ul style="list-style-type: none"> 1st vehicle failed in Summer 1995
	2		4835	1305	<ul style="list-style-type: none"> Scheduled for launch in September 1997
	3		8060	2500	<ul style="list-style-type: none"> Planned 57-112° orbital capability from SFA LC-46 Planned 147-270° orbital capability from VAFB SLC-6/SLF
Taurus	1	US	3200	830	<ul style="list-style-type: none"> Taurus is a Pegasus mounted on top of a Castor 120 first stage Taurus utilizes horizontal payload mating
	2				
Alliant Techsystems	DCLS-A	US	1000 (est.)		<ul style="list-style-type: none"> Still in design phase
Proton	D-1-e	Russia	44,000	12,200	<ul style="list-style-type: none"> Launching at Cape Canaveral would increase performance to equatorial orbit
Typhoon	2	Ukraine	8800		<ul style="list-style-type: none"> Ukrainian launch vehicle based on SS-9 ICBM
	3		TBD		<ul style="list-style-type: none"> Launched from Plesetsk and Baikonour Horizontal transportation; high degree of prelaunch and launch automation
Zenit	2	Ukraine	30,300	9480	<ul style="list-style-type: none"> Plans are for launches from a sea-based platform with Boeing contract
	3		TBD		<ul style="list-style-type: none"> Planned performance increase with new upper stage and launch site latitude 2 Pads available at Plesetsk for Zenit Discussions under way with Cape York Space Agency, Queensland, Australia
Mkhutman II		US	1600	N/A	<ul style="list-style-type: none"> Can also be used for suborbital missions
SFA RT (SS-25)		Russia	1260	N/A	<ul style="list-style-type: none"> Launched from a mobile transporter Marketed by STC Complex (joint stock venture with Moscow Institute of Heat Transfer)

Market Analysis - What is the Mission Model...

A SUBSTANTIAL DOMESTIC LAUNCH MARKET EXISTS FOR THE FORESEEABLE FUTURE.

**Projected Domestic Annual Payloads
(Equatorial - Medium Latitudes)
(STS Manifested Flights Removed)**



Source: National Mission Model, USAF, July 1996

Market Analysis - What is the Mission Model...

THE INTERNATIONAL LAUNCH MARKET WILL SIGNIFICANTLY ADD TO PROJECTED DEMAND. FURTHER ANALYSIS IS REQUIRED TO DETERMINE THE "TRUE" MISSION MODEL FROM AN INTERNATIONAL AND COMMERCIAL PERSPECTIVE.

- Current data sources predict different levels of activity for the next twenty years
 - US Air Force National Mission Model (DoD, NASA, and Commercial), July 1996
 - Commercial Space Transportation Advisory Committee (COMSTAC) Commercial Spacecraft Mission Model Update, May 1995
 - Commercial Space Transportation Study Final Report, May 1994
 - LEO Commercial Market Projections, Department of Transportation, Federal Aviation Administration, Office of the Associate Administrator for Commercial Space Transportation, April 1996
 - Launch Services Market Survey: Worldwide Prospects 1996-2006, Euroconsult, 1996
- Several commercial ventures could add substantially to the existing Air Force Mission Model.
- The Air Force Mission Model is based on known, funded projects in the domestic market.
- The Mission Model should also include International Payloads to determine the "true" market.
- Payload manufacturers are investing in increased production capability, expecting a higher demand in the future, specifically in the satellite telecommunications market.
- Capitalizing on the opportunity to utilize international launch vehicles will provide additional launch capability.

Assessment of Accomplishments...

SFA ACCOMPLISHMENTS WERE ASSESSED IN THE FOLLOWING AREAS:

- ☐ Launch Capability
- ☐ Tourism and Education
- ☐ Financial/Economic
- ☐ Legislative/Regulatory
- ☐ International
- ☐ Marketing

Assessment of Accomplishments - Launch Capability...

SFA IS DEVELOPING A SUFFICIENT LAUNCH CAPABILITY TO SUPPORT NUMEROUS LAUNCH VEHICLE CUSTOMERS AND ATTRACT NEW DOMESTIC AND INTERNATIONAL LAUNCH VEHICLE AND PAYLOAD PROVIDERS.

Item	Findings	Assessment
<p>Construction and Development Phase</p> <p>LC 46</p>	<ul style="list-style-type: none"> • Accommodates multiple launch vehicles • Joint utilization capability with Navy • Implements state-of-the-art technology • Minimized interfaces and maintenance • Flight Safety and Range Support Availability • Construction on schedule and within budget • Multiple funding sources 	<ul style="list-style-type: none"> • Excellent capability for launching of small launch vehicles and payloads. Recognizing International competition, striving for most cost effective operation. • User friendly environment with a minimum of interfaces both internally and externally to attract commercial space customers. • Implementation is accomplished with a small core of experienced and dedicated personnel. • SFA has done an excellent job to integrate Range Safety and Support considerations into the development of the complex. SFA has made excellent utilization of available funding and developed other unique funding arrangements.
SFA organization	<ul style="list-style-type: none"> • Facilitator for launch operations • Small cadre of competent personnel in assigned areas • Focus is on developing business in Florida • Established working relationships with the Range, launch service providers, payload manufacturers, and regulatory agencies 	<ul style="list-style-type: none"> • SFA operates extremely well with a minimum of personnel. • SFA has elected to delegate and facilitate required work and provides an interface between customers, launch vehicle providers, and the Air Force, minimizing SFA staffing costs. • SFA has done an excellent job in developing a working relationship with the Air Force to provide a more user friendly launch environment

Assessment of Accomplishments - Launch Capability... (continued)

Item	Findings	Assessment
Operations Phase	<ul style="list-style-type: none"> • Focus on providing user friendly environment 	<ul style="list-style-type: none"> • Customer Service Center, currently in development, provides insight and vision into providing an increase in "user friendliness."
Launch Support Capability	<ul style="list-style-type: none"> • Facilitate close coordination between launch service providers, payload, providers, and range support • CSC serves as a single locale for commercial space ops • Plans will support development and utilization of international participation • AF support based on "excess capacity" at current launch pads • AF downsizing and budget reductions impact launch support 	<ul style="list-style-type: none"> • CSC will provide the environment to consolidate commercial space operations into one interactive location. • Pursue reducing launch pad usage/access fees for satellite and launch vehicle manufacturers to encourage LC 46 usage. • Continued pursuit of additional underutilized government resources (2nd launch platform and bunkhouse operations center). • Utilization by academia will enhance education and community involvement. • CSC could transition to an International facility. • Can minimize AF budget constraints by seeking funding through a separate commercial space budget line and additional DOT/OCST funding.

Assessment of Accomplishments - Tourism and Education...

IMMEDIATE AND SUSTAINING ECONOMIC BENEFITS WILL BE ACHIEVED THROUGH CONTINUED PURSUIT OF TOURISM AND EDUCATIONAL OPPORTUNITIES. EDUCATION CONTINUES TO BE A HIGH PRIORITY FOR SFA IN THE DEVELOPMENT OF THE CURRENT AND FUTURE WORKFORCE.

Item	Findings	Assessment
Tourism	<ul style="list-style-type: none"> SFA participating in development of State tourism Provided unique funding arrangements for construction Enhances space-related interests economically Link between tourism, education, and the space industry 	<ul style="list-style-type: none"> SFA has provided \$90M into the local economy Provides ties to local organizations Major contributor in developing tourism in the State. Generating tourism sparks interest in education in the space industry. SFA is providing the critical link to involve tourism, education, and space communities.
Education	<ul style="list-style-type: none"> Development of space-related academia. Florida Space Institute is an SFA-coordinated partnership between Brevard Community College, Florida Institute of Technology, and University of Central Florida Sponsor of Student Sub-orbital Launch Programs Space Communications Technology Center at Florida Atlantic University Workforce Training & Certification Program 	<ul style="list-style-type: none"> SFA has taken the initiative to get involved and lead education efforts Sub-orbital Launch Program provides a focused commercial launch research partnership with Florida institutions which provides strong educational return on state investment. SFA realizes the importance of education in the future of the commercial space industry SFA attracted the \$5M satellite technology development center to Boca Raton

Assessment of Accomplishments - Financial/Economic...

SFA HAS UTILIZED APPROPRIATIONS WISELY. WITH A FOCUSED MARKETING PLAN, THERE IS NO EVIDENCE THIS TREND WILL NOT CONTINUE.

Funding Source		Project	Funds Rec'd	Assessment		
				As To SFA	As To State	Overall
Grants	Launch Complex 46	Customer Service Center Design	\$.7M from NASA (\$.3M for LC 46 \$.4M for CSC)	<ul style="list-style-type: none"> Creates launch capabilities, a core activity, that Orbital Sciences Corp., Lock-Mart, Alliant, and Taiwan have committed to use. Expected to generate monthly access fees of amount TBD 	<ul style="list-style-type: none"> Expected to attract millions of dollars of new business to Brevard County, including creation of jobs in launch services and satellite processing. 	<ul style="list-style-type: none"> Paradigm of how SFA can be the catalyst for a collaboration, including both the Federal Government and private industry, to stimulate economic development.
				<ul style="list-style-type: none"> Will help to attract commercial launches to LC 46 or other SFA facilities. 	<ul style="list-style-type: none"> Increase in launches should attract new business to the State, stimulating the economy. 	<ul style="list-style-type: none"> Too early to assess.
				<ul style="list-style-type: none"> Would increase launch capability and generate further access fees. 	<ul style="list-style-type: none"> Same as LC-46. 	<ul style="list-style-type: none"> Too early to assess.
				<ul style="list-style-type: none"> Supports educational aspect of SFA mission. Fulfills economic development aspect of SFA mission. 	<ul style="list-style-type: none"> Substantial capital investment attracted to Boca Raton. Job creation. 	<ul style="list-style-type: none"> Positive example of SFA acting in partnership with a non-profit educational institution to achieve a joint goal.
Conduit Financing	Apollo/Saturn V Center	U.S. Space Camp	\$25M	<ul style="list-style-type: none"> Allowed NASA to avoid continued postponement of project while waiting for federal appropriation. Prevents further deterioration of Saturn V from exposure to the elements. \$100,000 annual issuer's fee for 8 years 	<ul style="list-style-type: none"> Increases state tourism. KSC bus tour attendance projected to more than double over 10 years. Tax revenues from tourists. 	<ul style="list-style-type: none"> Positive example of SFA acting in partnership with NASA to accomplish a joint goal.
				<ul style="list-style-type: none"> Fulfills educational aspect of SFA mission. Established SFA as a conduit issuer in the tax-exempt debt market. \$12.5K one-time issuer's fee. 	<ul style="list-style-type: none"> Increase state tourism. Space Camp facility attracts approximately 200,000 tourists to Brevard County annually. Tax revenues from tourists. 	<ul style="list-style-type: none"> Positive example of SFA acting in partnership with a non-profit, educational organization to achieve a joint goal.

Assessment of Accomplishments - Financial/Economic... (continued)

Funding Source	Project	Funds Rec'd	Assessment		
			As To SFA	As To State	Overall
Limited Obligation Bank Loan	Titan IV Rocket Motor Storage Facility	\$ 28M	<ul style="list-style-type: none"> Administration fee of \$18,000 per month SFA will own, debt-free, as of October 1999 	<ul style="list-style-type: none"> \$4.2M railroad upgrade for state Reduces likelihood of future closing of Camp Blanding Sales Tax collections of \$24,700 per month on lease payments 	<ul style="list-style-type: none"> Positive example of SFA acting in partnership with important industry member and thereby attracting a substantial capital investment to the State.
Appropriations	International Spaceport (legislature)	\$.3M	<ul style="list-style-type: none"> Increased capability which increases potential customers 	<ul style="list-style-type: none"> Increases Infrastructure leading to launches and revenues 	<ul style="list-style-type: none"> SFA has been fiscally responsible & conservative in its use of funds.
	1997 Appropriation (State)	\$.480M	<ul style="list-style-type: none"> To help with day to day operations 	<ul style="list-style-type: none"> Enables SFA to continue to facilitate growth in Florida's space program 	<ul style="list-style-type: none"> SFA has been fiscally responsible & conservative in its use of funds.
	Florida Space Institute (State and Federal funds)	Proposed	<ul style="list-style-type: none"> Fulfill mission statement and visibility 	<ul style="list-style-type: none"> Increased academic involvement in space industry 	<ul style="list-style-type: none"> SFA has been fiscally responsible & conservative in its use of funds.
	Liquid Hydrogen Production Facility	--	<ul style="list-style-type: none"> Fulfills economic development aspect of SFA mission. 	<ul style="list-style-type: none"> Attracted \$25M Air Products and Chemicals facility to Santa Rosa County. Facility generates new jobs and tax revenues. 	<ul style="list-style-type: none"> Positive example of SFA working with an important industry member and attracting a substantial capital investment to the state.
Non-Interest Bearing Loan	Loan from Florida Department of Transportation	\$ 1.2M	<ul style="list-style-type: none"> To help with day to day operations and various capital projects 	<ul style="list-style-type: none"> Enables SFA to continue to facilitate growth in Florida's space program 	<ul style="list-style-type: none"> SFA has been fiscally responsible & conservative in its use of funds.

Assessment of Accomplishments - Legislative/Regulatory...

SFA HAS BEEN SUCCESSFUL IN GAINING THE SUPPORT OF STATE AND FEDERAL AUTHORITIES.

Item	Findings	Assessment
<p>Legislative Activities</p>	<ul style="list-style-type: none"> Legislative goals to develop support among policymakers to ensure future viability since 1989 Growth of the SFA agenda will require careful attention to legislative agenda and Enterprise Florida marketing and advocacy Changes in the political dimensions of the Legislature and transfer of economic development power to Enterprise Florida will create the need to adapt to new decision makers. Legislative activities will be based on SFA's long term established goals. 	<ul style="list-style-type: none"> Need to ensure goals are viable with new administrations. SFA statute provides for a broad range of capabilities and powers, some of which have been effectively exercised. Effective trade-off of State and Federal funding support (strong "matching funds" argument). Develop plan for other sources of revenue to fund projects such as the sales tax recapture concept. Develop tax exempt bonding authority. Continue to establish stronger advocacy presence with Legislative Staff and members.

Assessment of Accomplishments - International...

WHILE SFA HAS SUCCESSFULLY ATTRACTED INTERNATIONAL CUSTOMERS, U.S. TRADE RESTRICTIONS EXIST WHICH COULD PRECLUDE OR DELAY LAUNCH ACTIVITY.

Item	Findings	Assessment
Launch Agreement with Mexico to use Mexican and Gulf County facilities (1994-95)	<ul style="list-style-type: none"> Small rockets launched for atmospheric testing Exhibit developed for display in Mexico 	<ul style="list-style-type: none"> Established the legal ability and capability of SFA to be a principal party in a bilateral space-related contract. Set a precedent for export of US rockets to a foreign country under SFA banner. Agreements that followed established the pattern which can be utilized for other international agreements.
Taiwan satellite agreement (1996)	<ul style="list-style-type: none"> Satellite will be launched from LC-46 in 1997 	<ul style="list-style-type: none"> Cooperation between private industry, foreign government, and SFA is the model which will be used for future agreements. SFA overcame barriers before launch site was completed.
Space Camp dormitory financing (1995)	<ul style="list-style-type: none"> SFA arranged financing through their resources 	<ul style="list-style-type: none"> Space Camp has had a significant international student population. SFA arranging the financing demonstrates the leverage which SFA can bring to bear in important projects related to the space community. Demonstrates the financing capability for multi-million dollar projects. Important to international community.
Memorandum of Understanding between SFA and the National Space Agency of Ukraine (1996)	<ul style="list-style-type: none"> Agreement to support commercial launches and space industry cooperation 	<ul style="list-style-type: none"> SFA competed with other international launch facilities in Brazil, Guiana, and Australia. SFA's efforts have resulted in a commitment which may make Florida the primary launch site for these vehicles. Florida could become the primary location for interaction between Ukrainian space technology and the international space community.

Assessment of Accomplishments - International... (continued)

Item	Findings	Assessment
Wisconsin educational launches	<ul style="list-style-type: none"> Small rockets launched for educational purposes 	<ul style="list-style-type: none"> SFA continues to demonstrate the capability of performing "on the road." Illustrates educational involvement.
International Center for Space and Emerging Technology	<ul style="list-style-type: none"> Customer Service Center and university research facility for domestic and international customers 	<ul style="list-style-type: none"> Central facility for technology exchange and space-related events for the international community. Customer Service Center can evolve into an important role in the international launch arena. Need to continue planning the Customer Service Center's functions including the facilitation of launch services support.
Export Processing Zone for Space Technology	<ul style="list-style-type: none"> Planned expansion of the current Cape Canaveral Free Trade Zone located at the port. 	<ul style="list-style-type: none"> SFA has created a concept which would allow the import of foreign rockets, components, and satellites; duty, quota, and tariff free. Need to coordinate concepts with local, state, and federal organizations.

Assessment of Accomplishments - Marketing...

EFFORTS TO DATE HAVE BEEN CREATIVE AND AGGRESSIVE WITH IDENTIFIED TARGETS. FUTURE SUCCESSSES WILL REQUIRE A FOCUSED AND COMPLETE MARKETING STRATEGY AND PLAN.

Item	Findings	Assessment
Marketing	<ul style="list-style-type: none"> Advocate for commercial space operations and related industry Development and launch of commercial space vehicles at CCAFS Customer perception of non-user-friendly environment US/Russia launch agreement potential Marketing position and approach 	<ul style="list-style-type: none"> Considering the limited funding available, SFA has been diligent in marketing commercial space launch operations, and has performed extremely well. Launch revenue should not be the sole evaluation measure. SFA has worked with the AF as a team to improve environment and increase marketing potential. SFA has attracted international interest in the US commercial space launch capability. Marketing should be a high priority. Need to develop both a marketing plan and a briefing suite for potential customers. Improve Internet presence. Investigate links from other homepages.
Space Launch Conferences	<ul style="list-style-type: none"> SFA sponsored the third space launch conference in cooperation with the Air Force 45th Space Wing, FIT, and the Space Coast EDC focusing on policies and programs that affect the Cape's launch capabilities and international competitiveness 	<ul style="list-style-type: none"> Successful in attracting top domestic and international space launch conferences. National and international recognition of SFA as a leader for commercial space launch policy and business. Outstanding effort to create a forum for commercial dialogue on space launch opportunities in Florida.

Assessment of Accomplishments - Report Card...

OVERALL, SFA HAS BEEN HIGHLY SUCCESSFUL IN MEETING ITS MISSION.

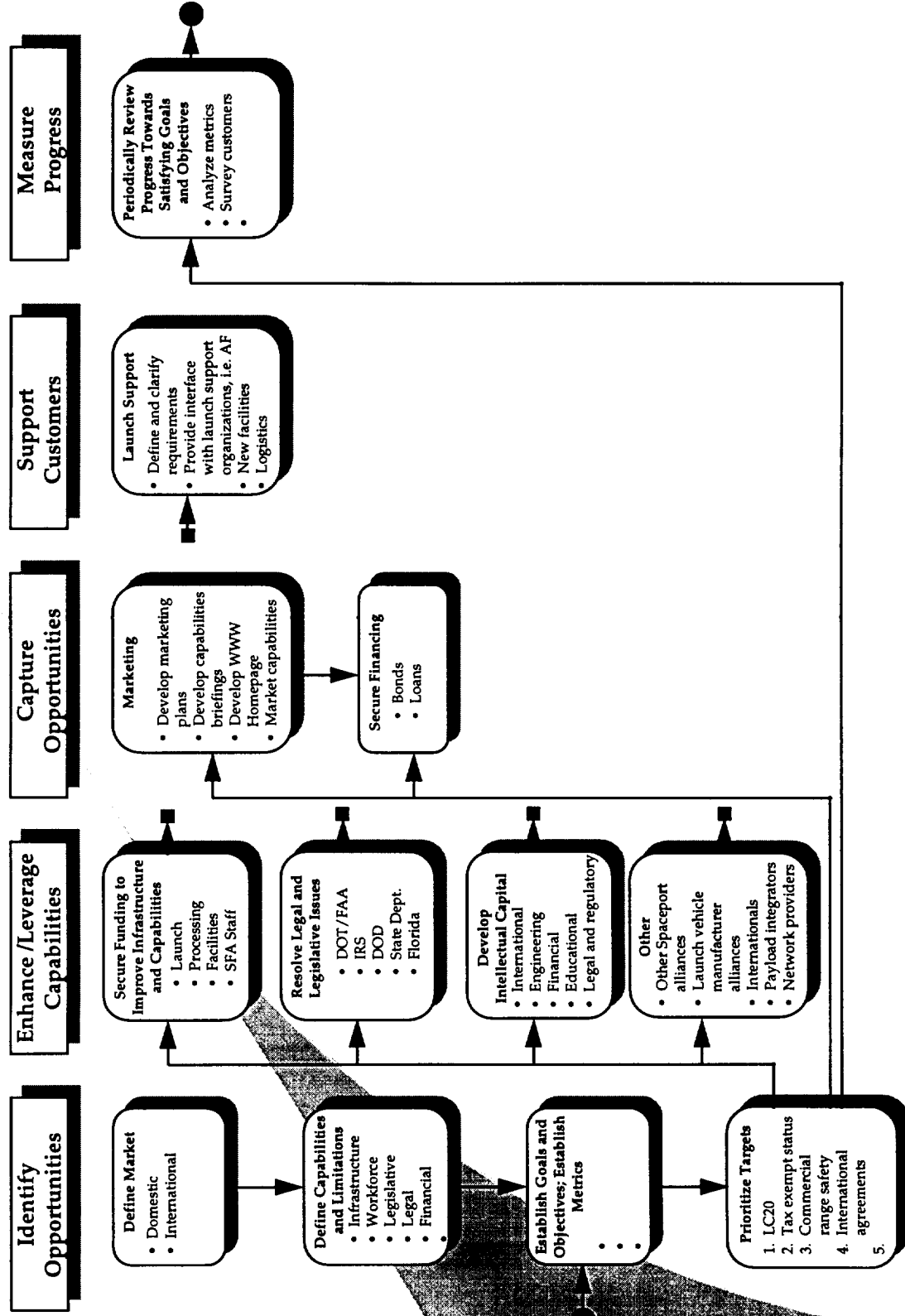
Item	Grade	Comments	How to "Raise your Grade"
Launch Capability	A	LC-46 on schedule, on budget. Meets technical requirements	Plan future jointly with 45th Space Wing.
Tourism and Education	B	Increased Florida tourism which has significantly brought in revenue to Brevard County.	Continue to look for opportunities
Economic Development and Financial	A	Established educational relationships with local academia.	Pursue alignment with major university aerospace departments.
Legislative Status, Regulatory and Political Issues	B+	Significant contribution to Florida space-related projects. Innovative and resourceful financing.	Develop a plan to work with Enterprise Florida on appropriate projects.
Marketing	B	Successfully developed key relationships in local, state, and federal governments.	Reestablish relationships based on recent elections. Develop a political agenda to support SFA goals.
International	B+	Responds well to opportunities, but needs to focus activities.	Develop a marketing plan and strategy. Comprehensive and technical Internet homepage development and links.
	B+	Actively pursued the important customers. Needs to ensure the list is complete.	Develop a target list of opportunities

Sample Operating Concept...

A STRUCTURED OPERATING CONCEPT IS REQUIRED FOR SFA TO ATTAIN A HIGHER LEVEL OF SUCCESS.

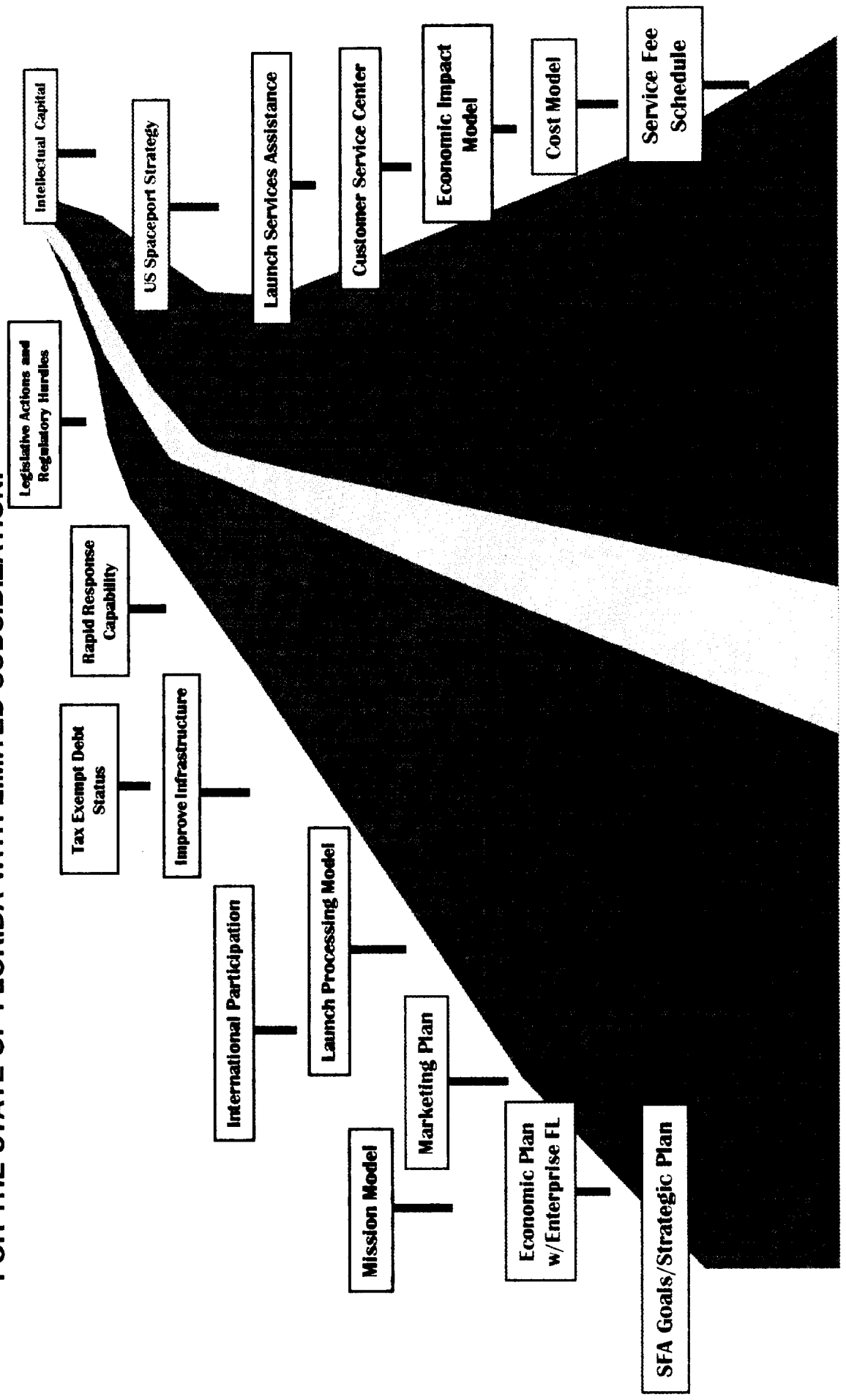
- Drivers for an SFA Operating Concept
 - Multiple efforts are ongoing concurrently with limited staff
 - Need to prioritize activities and provide a focus
 - Develop long-term agreements with infrastructure, and domestic and international payload developers and launch vehicle manufacturers
 - Need to communicate objectives to all team members
 - Identify SFA Strengths and Weaknesses

Sample Operating Concept...



Roadmap to Success...

THE SAMPLE OPERATING CONCEPT, IN CONJUNCTION WITH THE ROADMAP TO SUCCESS, IS A PATH FOR SFA TO CONTINUE DEVELOPING ECONOMIC OPPORTUNITIES FOR THE STATE OF FLORIDA WITH LIMITED SUBSIDIZATION.



SFA Goals/Strategic Plan

- Review current Strategic Plan
- Define Weaknesses and Limitations
- Identify mission, vision, goals, and objectives
- Develop action strategies
- Implement Strategic Plan

Develop Marketing Plan

- Develop a standard marketing briefing
- Determine potential customers
 - Payloads
 - Launch Vehicles
- Develop Marketing Strategy
 - Prioritize list of customers
- Develop a user friendly, customer-oriented web site
 - Link to other sites
- Develop a media plan

Mission Model Analysis

- Determine Commercial Model
 - Domestic
 - Foreign
- Gather data on new mission models from Air Force and NASA
- Develop alternate models for multiple scenarios

International Participation

- Evaluate international spaceport capabilities
- Determine launch costs
- Determine customers who use spaceports
 - Identify viable customers
- Determine International participation barriers
- Establish agreements with International organizations

Work with the 45th Space Wing to improve Launch Infrastructure

- Assist in facility/capability inventory
 - Define opportunities for commercial use of facilities
- Identify and prioritize process improvement needs
- Prioritize improvement needs
- Determine costs
- Determine funding sources
- Provide procurement information

Develop Rapid Response Capability

- Evaluate infrastructure improvements
- Determine realistic turnaround goals
- Determine methods to improve launch processing efficiency

Develop Intellectual Capital

- Work with Florida Space Institute on Photon Satellite program
- Establish FSI in statue
- Pursue State funding for facility, classroom, and program development
- Continue to improve suborbital launch program
- Establish relationships with Aerospace Engineering departments
- Establish relationships with MBA programs
- Out-of-state tuition for international space professionals
- Space-related contests for students

Report Florida Authority Roadmap to Success

Service Fee Schedule

Determine fee for each service
Conduct bottoms up analysis to
Determine required fees
Determine investment required
Determine Return on Investment

Develop Cost Model to Measure Revenue

- Determine funding profiles
- Identify future funding requirements
- Design a model to include current and future projects
- Prepare sample reports to illustrate changes in data
- Populate database

Develop Economic Plan with Enterprise Florida

- Identify grant-worthy projects
- Establish common economic goals
- Decide future role as conduit debt issuer

Functional Architecture Customer Service Center

Identify appropriate organizations for
in the CSC
Define interfaces and partnerships
Determine fees (if any) for residents
Identify organizations
Negotiate agreements

Develop Economic Impact Model

- Define market
- Characterize industry
- Assess industry
- Determine industry projections
- Conduct pro forma analysis
- Conduct secondary effects analysis

Develop a Launch Processing Model

- Determine current and existing launch processing facilities
- Develop model to evaluate potential improvements
- Identify potential infrastructure improvements
- Determine location for payload processing
- Streamline the Launch Environment
 - Commercialization of Range Safety

Tax Exempt Debt Status

Obtain support of other State
Identify support authorities
Determine low revenue loss
Obtain support of Clinton
Administration
Report on top of progress of 1997
Legislation

Determine Regulatory Requirements to Accomplish SFA Goals

- Expand involvement in conferences
- Expand duty-free zone around Cape Canaveral
- Develop stronger advocacy presence
- Pursue establishing stable funding source

Develop a Launch Services Assistance Process

- Determine regulatory and licensing barriers
- Determine customer needs
- Prioritize needs
- Develop plan to overcome hurdles

US Spaceport Strategy

Coordinate with other US spaceports
Identify common goals
Determine exempt debt status
Identify trade zone regulations
Identify payload and launch vehicle
Identify ways to attract customers

Prepared by: Booz-Allen & Hamilton
Prepared for: Spaceport Florida Authority
Business Plan
Last Revised: 30 December 1996